IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Young-Nam Yun	)	
		) Group Art Unit:	2871
Serial No.:	10/530,231	)	
		)	
Filed:	April 4, 2005	) Examiner:	Duong, Thio V.
		)	
For:	LIQUID CRYSTAL DISPLAY DEVICE	)	

REPLY TO OFFICE ACTION
UNDER 37 C.F.R. § 1.114

VIA EFS
Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Final Office action of April 21, 2008 and the Advisory action of July 02, 2008, please amend the above-identified application as follows:

Amendments to the Claims begin on page 2 of this paper; and

Remarks begin on page 5 of this paper.

Listing of Claims:

1. (Currently amended) A liquid crystal display device comprising:

a light generating section to generate a first light;

a polarizing member which transmits a first polarity of light and absorbs a second polarity of light which is substantially orthogonal to the first polarity, wherein the polarizing member includes a polarizing layer and a light-diffusing layer integrally formed with the polarizing layer and having a concavo-convex surface, and the polarizing member is disposed adjacent to the light generating section so as to generate a second and a third light by polarizing and diffusing the first light; and

a liquid crystal display panel disposed on the polarizing member to display an image by using the third light and including a first substrate, a second substrate opposite to the first substrate and liquid crystal interposed between the first and second substrates,

wherein the first light directly enters into the polarizing member after exiting from the light generating section.

2. (Previously presented) The liquid crystal display device as claimed in claim 1, wherein the light diffusing layer is positioned in opposition to the light generation section so as to generate the second light by diffusing the first light, and

the polarizing layer is disposed on the light-diffusing layer so as to generate the third light by polarizing the second light.

3. (Previously presented) The liquid crystal display device as claimed in claim 1, wherein the polarizing layer is positioned in opposition to the light generating section so as to generate the second light by polarizing the first light, and

the light-diffusing layer is disposed on the polarizing layer so as to generate the third light by diffusing the second light.

4. (Currently amended) A liquid crystal display device comprising:

a light generating section to generate first light;

a semi-transmissive film disposed on the light generating section which transmits the first light and a first polarity of a second light which is incident to the semi-transmissive film from a direction substantially opposite to the first light, and which reflects only a second polarity of the second light, wherein the second polarity of the second light has a polarity substantially orthogonal to the polarity of the transmitted first polarity of the second light;

a polarizing member which includes a polarizing layer and a light-diffusing layer integrally formed with the polarizing layer, wherein the polarizing member is disposed adjacent to the semi-transmissive film so as to generate a third and a fifth light by polarizing and diffusing the transmitted portion of the first light and to generate a fourth and a sixth light by polarizing and diffusing the reflected portion of the second light; and

a liquid crystal display panel disposed on the polarizing member to display an image by selectively receiving the fifth light or the sixth light and including a first substrate, a second substrate opposite to the first substrate and liquid crystal interposed between the first and second substrates,

wherein the first light directly enters into the semi-transmissive film after exiting from the light generating section.

5. (Previously presented) The liquid crystal display device as claimed in claim 4, wherein the light-diffusing layer is positioned in opposition to the semi-transmissive film so as to generate the third light by diffusing the first light and to generate the fourth light by diffusing the second light, and

the polarizing layer is disposed on the light-diffusing layer so as to generate the fifth light by polarizing the third light and to generate the sixth light by polarizing the fourth light.

6. (Original) The liquid crystal display device as claimed in claim 5, wherein the light-diffusing layer has a haze value above 20%.

7. (Original) The liquid crystal display device as claimed in claim 5,

wherein the light-diffusing layer comprises coating material coated on one surface of the polarizing layer and scattering material mixed with coating material.

8. (Original) The liquid crystal display device as claimed in claim 7, wherein coating material comprises acryl-based resin and scattering material includes silica particles.

9. (Previously presented) The liquid crystal display device as claimed in claim 4, wherein the polarizing layer is positioned in opposition to the semi-transmissive film so as to generate the third light by polarizing the first light and to generate the fourth light by polarizing the second light, and

the light diffusing layer is disposed on the polarizing layer in opposition to the first substrate so as to generate the fifth light by diffusing the third light and to generate the sixth light by diffusing the fourth light.

10. (Original) The liquid crystal display device as claimed in claim 4, wherein the second substrate comprises a color filter and a first electrode and the first substrate comprises a switching device and a second electrode opposite to the first electrode.

REMARKS

The above amendments and following remarks are made in response to the Final Office action of April 21, 2008. This response is being submitted with a request for continued examination (RCE) under 37 CFR 1.114.

Claims 1-10 are pending in the present application. Claims 1 and 4 are currently amended, leaving claims 1-10 for consideration upon entry of the present response.

The Examiner's reconsideration is respectfully requested in view of the following remarks. Support for the amendments to claims 1 and 4 may be found at least in FIGS. 1, 2 and 6 –8 of the application as originally filed. No new matter has been added.

Claim Rejections Under 35 U.S.C. § 112

Claim 4 stands rejected under 35 U.S.C. 112, first paragraph, as allegedly failing to comply with the written description requirement. In particular, the Examiner states that the specification does not describe the limitation "a semi-transmissive film disposed on the light generating section which transmits the first light and a first polarity of a second light which is incident to the semi-transmissive film from a direction substantially opposite to the first light, and which reflects only a second polarity of the second light, wherein the second polarity of the second light has a polarity substantially orthogonal to the polarity of the transmitted first polarity of the second light" recited in claim 4. The Examiner then states that according to the specification in page 17, lines 6-12, " a part of light, which is linearly polarized in the polarizing axis of the second polarizing plate 400, passes through the semi-transmissive film 600 and the remaining part of the light is reflected from the semi-transmissive film 600." The Examiner then concludes that the specification does not describe that the semi-transmissive film passes the (second) light having a first polarity and reflects only the (second) light having a second polarity, wherein the second polarity is substantially orthogonal to the first polarity.

On the contrary, it is respectfully noted that page 10 of the specification describes with respect to FIG. 4 that "[i]f the refractive index of the first and second layers 610 and 620 is same to each other in the x and z-directions and different from each other in the y-direction, when non-polarized light is incident in the vertical direction (z-direction) of the

semi-transmissive film 600, polarizing components of the x-direction pass through the semi-transmissive film 600 and polarizing component of the y-direction is reflected from the semi-transmissive film 600 according to Fresnel's equation. An example of a birefringent dielectric multi-layer having the above characteristic is a DBEF (dual brightness enhancement film) available from 3M company. . . . As described above, the DBEF of 3M company allows polarizing components of the x-direction to transmit therethrough and reflects polarizing components of the y-direction. The x-direction is parallel to the first polarizing plate 300 and the y-direction is parallel to the second polarizing plate 400."

Likewise, FIG. 8A and page 18 of the specification describing FIG. 18 indicate that " when pixel voltage is applied to the liquid crystal layer in the transmissive mode, light supplied from the light generating section 100 5 is incident into the semi-transmissive film 600. The semi-transmissive film 600 allows polarizing components parallel to the x-axis direction, which are included in light parallel to the polarizing axis of the second polarizing plate 400, to be partially reflected therefrom or to partially pass therethrough, and reflects polarizing components, which are parallel to the y-axis direction."

Therefore, it is respectfully submitted that the specification provides support for the semi-transmissive film passing the (second) light having a first polarity and reflecting only the (second) light having a second polarity, wherein the second polarity is substantially orthogonal to the first polarity.

Accordingly, it is respectfully requested that the rejection to claim 4 under §112, first paragraph be withdrawn.

Claim Rejections Under 35 U.S.C. § 102

To anticipate a claim under 35 U.S.C. § 102, a single source must contain all of the elements of the claim. *Lewmar Marine Inc. v. Barient, Inc.*, 827 F.2d 744, 747, 3 U.S.P.Q.2d 1766, 1768 (Fed. Cir. 1987), *cert. denied*, 484 U.S. 1007 (1988). Moreover, the single source must disclose all of the claimed elements "**arranged as in the claim**."

(Emphasis added.) *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 716, 223 U.S.P.Q. 1264, 1271 (Fed. Cir. 1984).

Claims 4, 5 and 9

Claims 4, 5 and 9 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Kotchick et al. (U.S. Patent No. 6,975, 455, hereinafter "Kotchick"). The Examiner states that Kotchick discloses all of the elements of the abovementioned claims primarily in FIGS. 4, 9 and 10.

Kotchick discloses in FIG. 4 relied upon by the Examiner a light generating section which generates a first light (442) which is incident on a prismatic layer 414 of a light controller layer 412. The light controller layer 412 then transmits a diffused light 443 different from the first light 442 (having different angles of transmission) toward the semi-transmissive film 408. The semi-transmissive film 408 then shows some of a second light 436 from an opposite direction of the first light 442 being incident on a top side of the semi-transmissive film 408 being reflected and some of the second light 436 transmitting through the semi-transmissive film 408 toward the light controller layer 412. The diffused light 443 is incident on a bottom side of the semi-transmissive film 408 and is reflected toward the light controller layer 412.

Thus, Kotchick does not disclose the semi-transmissive film 408 which transmits the first light 442 from the light generating section 410, as the prismatic layer 414 is disposed therebetween and only transmits the diffused light from the light controller layer 412 and the second light 435.

Moreover, with respect to FIGS. 9 and 10 relied upon by the Examiner, FIG. 9 illustrates a transflector assembly 900 which includes three (3) polarizing layers including an absorbing polarizer and a first reflective polarizer disposed to reflect at least a portion of light transmitted through the absorbing polarizer. A second reflective polarizer is disposed between the absorbing polarizer and the first reflective polarizer. (See Abstract.) Each of the polarizer layers 902, 904 and 906 have an adhesive layer 910, 912 disposed between adjacent polarizer layers (e.g., laminated together). (See FIG. 9 and col. 12, lines 13- 32.)

Thus, Kotchick discloses (3) polarizer layers 902, 904 and 906 laminated together with adhesive layers 910, 912, and considered the semi-transmissive film 408 in FIG. 4 of Kotchick in addition to the lower polarizing member 406 in FIG. 4 of Kotchick relied upon by the Examiner for his rejection of claim 4 on page 4 of the Detailed Action. The elements of Kotchick relied upon by the Examiner to meet the limitations of claim 4 of the present invention can hardly be said to be "arranged as in the claim". Moreover, it can hardly be said that the polarizing member 406 of Kotchick includes the polarizing layer 902 integrally formed with the light-diffusing layer 908, as alleged by the Examiner, since layer 908 is an adhesive layer, not a light diffusing layer. (See col. 12, lines 22-25.) In addition, Kotchick at most teaches the polarizing layer 902 being integrally formed with an adhesive layer 908 or 910, as the other polarizing layers 904 and 906 are separated from polarizer layer 902 via an adhesive layer 910 and 912.

Moreover, independent claims 1 and 4 have been amended to recite, *inter alia*, "*wherein the first light directly enters into the polarizing member/semi-transmissive film after exiting from the light generating section.*" In particular, independent claim 4 recites that a first light generated by a light generating section **directly** enters into a polarizing member after exiting from the light generating section.

In contrast, Kotchich includes a polarizing member 406, a light generating section 410 and a light controller layer 412. Thus, a light generated by the light generating section 410 enters into the polarizing member 406 through the light controller layer 412. Thus, Kotchich does not teach or disclose the features of the present invention as claimed in the amended claims 1 and 4.

More specifically, it is respectfully submitted that Kotchick does not teach or suggest a light generating section to generate first light; a semi-transmissive film disposed on the light generating section which **transmits the first light** and a first polarity of a second light which is incident to the semi-transmissive film from a direction substantially opposite to the first light, and which reflects only a second polarity of the second light, wherein the second polarity of the second light has a polarity substantially orthogonal to the polarity of the transmitted first polarity of the second light; a polarizing member which includes a polarizing layer and **a light-diffusing layer integrally formed with the polarizing layer**, wherein the polarizing member is disposed adjacent to the

semi-transmissive film so as to generate a third and a fifth light by polarizing and **diffusing the transmitted portion of the first light** and to generate a fourth and a sixth light by polarizing and diffusing the reflected portion of the second light; and . . . **wherein the first light *directly* enters into the semi-transmissive film after exiting from the light generating section**, as recited in independent claim 4.

Thus, it is respectfully submitted that claim 4, including claims depending therefrom, i.e., claims 5-10, define over Kotchick.

Accordingly, it is respectfully requested that the rejection to claims 4, 5 and 9 under § 102 be withdrawn.

Claim Rejections Under 35 U.S.C. § 103

Claims 1-3

Claims 1-3 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Kotchick in view of Epstein (U.S. Patent No. 6,801,276, hereinafter "Epstein"). The Examiner states that Kotchick discloses all of the elements of the abovementioned claims except, *the light diffusing layer having a concavo-convex surface*, which the Examiner states is disclosed primarily in FIG. 7 and column 13, lines 23-55 of Epstein.

Claims 1-3 claim the embodiment of FIG. 1 of the present invention. Therefore, Claims 1-3 are absent the element of the semi-transmissive film 600 of FIG. 2 (directed to claims 4-10) and is illustrated in the embodiment of FIG. 1 of the present invention.

As discussed above, Kotchick does not disclose a polarizing layer and a light-diffusing layer **integrally formed** with the polarizing layer [and] wherein the first light directly enters into the polarizing member after exiting from the light generating section, as recited in independent claim 1.

Furthermore, Kotchick includes the light controller layer 412 and the semi-transmissive film 408 disposed between the light generating section 410 and the polarizer member 406 of FIG. 4 relied upon by the Examiner. Thus, Kotchick does not disclose the polarizing member is disposed **adjacent to** the light generating section so as to generate a second and a third light by polarizing and diffusing **the first light** [from the

light generating section]; and . . . wherein the first light directly enters into the polarizing member after exiting from the light generating section. As discussed above, Kotchick does not disclose the first light 442 being incident upon the polarizing member 406 due to the prismatic layer 414 of the light controller layer 412 disposed therebetween.

Moreover, the alleged disclosure of Epstein does not cure the deficiencies noted above with respect to Kotchick.

In particular, neither Kotchick nor Epstein, either alone or in combination, disclose, teach or suggest wherein the polarizing member includes a polarizing layer and a light-diffusing layer **integrally formed** with the polarizing layer and having a concavo-convex surface, and the **polarizing member is disposed adjacent to the light generating section** so as to generate a second and a third light by **polarizing and diffusing the *first light***; and . . . **, wherein the first light directly enters into the polarizing member after exiting from the light generating section**, as recited in independent claim 1.

Thus, it is respectfully requested that claim 1, including claims depending therefrom, i.e., claims 2 and 3, define over Kotchick and Epstein.

Accordingly, it is respectfully requested that the rejection to claims 1-3 under § 103 be withdrawn.

Claims 6 and 10

Claims 6 and 10 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Kotchick in view of Epstein and further in view of Iijima (U.S. Patent No. 6,906,767, hereinafter "Iijima"). The Examiner states that Kotchick in view of Epstein discloses all of the elements of the abovementioned claims except, *the light-diffusing layer having a haze value above 20%*, which the Examiner states is disclosed primarily in column 9, lines 28-50 and column 12, lines 26-31 of Iijima.

Iijima is directed to an LCD with diffuser having a particular haze value and diffuser-reflector distance, and reduced parallax. (See Abstract). Iijima discloses a display device 10 including an upper polarizing plate 12, a liquid crystal display panel 20, a light diffusion plate 30, a lower polarizing plate 15, a reflection polarizing plate 40, a light source 70 and a light reflection plate 80. (See FIG. 5 and column 11, line 40

through column 13, line 49). The lower polarizing plate 15 of Iijima is disposed above a reflection polarizing plate 40, which in turn is disposed above a light source 70 in FIG. 5, and the polarizing plate 15 is disposed above a light diffusion plate 30 and a reflection polarizing plate 40, which in turn is disposed above a light source 70 in FIG. 7. The polarizing plate 15 and the light diffusion plate 30 are separated from one another. (See FIG. 5 and FIG. 7).

Iijima does not cure the defects of Kotchick and Epstein as discussed above, namely, Iijima does not teach, suggest or disclose: **a semi-transmissive film disposed on the light generating section which transmits the first light and a first polarity of a second light which is incident to the semi-transmissive film from a direction substantially opposite to the first light, and which reflects only a second polarity of the second light, wherein the second polarity of the second light has a polarity substantially orthogonal to the polarity of the transmitted first polarity of the second light; and a polarizing member which includes a polarizing layer and a light-diffusing layer integrally formed with the polarizing layer, wherein the polarizing member is disposed adjacent to the semi-transmissive film so as to generate a third and a fifth light by polarizing and diffusing the transmitted portion of the first light and to generate a fourth and a sixth light by polarizing and diffusing the reflected portion of the second light; and . . . wherein the first light directly enters into the semi-transmissive film after exiting from the light generating section** as claimed in independent claim 4 of the present invention.

Thus, claim 4 is believed to be patentably distinct and not anticipated by Kotchick, Epstein, Iijima or any combination thereof. Claims 6 and 10 depend directly or indirectly from claim 4, and thus include all of the limitations of claim 4. It is thus believed that dependent 6 and 10 are allowable for at least the reasons given for independent claim 4, which is believed to be allowable.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 6 and 10 and the subsequent allowance of those claims.

Claims 7 and 8

Claims 7 and 8 stand rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Kotchick in view of Kawamoto et al. (U.S. Patent No. 6,809,782, hereinafter "Kawamoto"). The Examiner has stated that Kotchick and Kawamoto teach all of the limitations of claims 7 and 8.

As mentioned above for amended independent claim 4, Kotchick neither teaches nor suggests **a semi-transmissive film disposed on the light generating section which transmits the first light and a first polarity of a second light which is incident to the semi-transmissive film from a direction substantially opposite to the first light, and which reflects only a second polarity of the second light, wherein the second polarity of the second light has a polarity substantially orthogonal to the polarity of the transmitted first polarity of the second light; and a polarizing member which includes a polarizing layer and a light-diffusing layer integrally formed with the polarizing layer, wherein the polarizing member is disposed adjacent to the semi-transmissive film so as to generate a third and a fifth light by polarizing and diffusing the transmitted portion of the first light and to generate a fourth and a sixth light by polarizing and diffusing the reflected portion of the second light; and . . . wherein the first light directly enters into the semi-transmissive film after exiting from the light generating section** as claimed in independent claim 4 of the present invention.

Kawamoto is directed to a display including a diffusing layer 11, a linearly polarized light separator 12 and a light absorbing layer 13. The display also includes a liquid crystal cell 2 and an absorbing polarizer 3. (See FIG. 1 and column 4, lines 37-49). The diffusing layer 11 and the linearly polarized light separator 13 are separately formed.

Kawamoto, however, fails to cure the deficiencies of Kotchick with respect to independent claim 4, namely, Kawamoto fails to teach or suggest **a semi-transmissive film disposed on the light generating section which transmits the first light and a first polarity of a second light which is incident to the semi-transmissive film from a direction substantially opposite to the first light, and which reflects only a second polarity of the second light, wherein the second polarity of the second light has a polarity substantially orthogonal to the polarity of the transmitted first polarity of**

the second light; and a polarizing member which includes a polarizing layer and a light-diffusing layer integrally formed with the polarizing layer, wherein the polarizing member is disposed adjacent to the semi-transmissive film so as to generate a third and a fifth light by polarizing and diffusing the transmitted portion of the first light and to generate a fourth and a sixth light by polarizing and diffusing the reflected portion of the second light; and . . . wherein the first light directly enters into the semi-transmissive film after exiting from the light generating section as claimed in independent claim 4 of the present invention.

Thus, Applicants submit that Kotchick and Kawamoto, alone or in combination, do not render obvious the subject matter of claim 4. Claims 7 and 8 depend from claim 4, and thus include the allowable elements of claim 4. It is thus believed that the dependent claims are patentable over the cited references for at least the reasons given above for independent claim 4.

Accordingly, it is respectfully submitted that the claimed invention is allowable over the cited references. The Examiner's reconsideration and withdrawal of the rejection of claims 7 and 8, and the subsequent allowance of claims 7 and 8, is respectfully requested.

Conclusion

In light of the above remarks, the present application including claims 1-10 is believed to be in condition for allowance.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the outstanding rejections. If there are any charges due with respect to this response, please charge them to Deposit Account No. 06-1130 maintained by Applicants' Attorneys.

Applicants hereby petition for any necessary extension of time required under 37 C.F.R. 1.136(a) or 1.136(b) which may be required for entry and consideration of the present Reply.

Respectfully submitted,

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